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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,614	06/25/2003	Yukihiro Nakano	239459US0	2488

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EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/602,614

Applicant(s)

NAKANO ET AL.

Examiner

Callie E. Shosho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/25/03.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-13 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/15/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claim 9, which depends on claim 7, recites the limitation "the chain transfer agent having an ionic group" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim given that there is no disclosure of chain transfer agent in claim 7. Should the dependency of claim 9 be changed to claim 8?

(b) Claim 13 discloses "diluting the paste with water as the occasion demands". The scope of the claim is confusing because it is not clear what is meant by "as the occasion demands" or when or why such occasion would or would not be demanded.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Bassett (U.S. 4,139,514).

Bassett discloses aqueous ink comprising pigment and water-insoluble latex that is formed using chain transfer agent such as 3-mercapto-1,2-propanediol that is present during polymerization (col.1, lines 50-51 and 56-65, col.2, lines 60-63, col.3, lines 1-2 and 43-45, and col.4, line 35). Although there is no explicit disclosure that the latex possesses two hydroxyl groups at its end, given that the latex is formed using chain transfer agent such as 3-mercapto-1,2-propanediol, which is identical to chain transfer agent utilized in the present invention, it is clear that the latex would inherently possess two hydroxyl groups at its end given that 3-mercapto-1,2-propanediol is used during the polymerization of the latex.

In light of the above, it is clear that Bassett anticipates the present claims.

5. Claim 7 is rejected under 35 U.S.C. 102(e) as being anticipated by Cottrell et al. (U.S. 2003/0176533).

Cottrell et al. disclose water-based ink comprising pigment and polyester terminated with carboxy group (paragraphs 1, 28, and 41).

In light of the above, it is clear that Cottrell et al. anticipate the present claim.

6. Claims 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Ma et al. (U.S. 5,272,201).

Ma et al. disclose water-based ink comprising pigment and water-insoluble polymer having ionic group at its end, i.e. amine, obtained from polymerization initiator having amine group or chain transfer agent having amine group (col.1, lines 15-20, col.2, lines 56-58, col.3, line 16, col.4, lines 8-10 and 35-36, and col.4, line 45-col.5, line 57).

In light of the above, it is clear that Ma et al. anticipate the present claims.

7. Claims 1, 4, and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al. (U.S. 2003/0092797).

Wang et al. disclose water-based ink comprising pigment and hyperbranched polymer with two or more hydrophilic end groups wherein the hydrophilic end groups include anionic group, cationic group, or hydroxyl group and the polymer includes water-insoluble polymer such as polyester and polyurethane (paragraphs 12, 21, 53, and 55).

In light of the above, it is clear that Wang et al. anticipate the present claims.

8. Claims 7 and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 1158030.

EP 1158030 discloses water-based ink comprising aqueous medium and colorant comprising polymer particles that comprise pigment and water-insoluble polymer which is obtained from salt-forming group containing monomer, macromer, monomer copolymerizable with the salt-forming group containing monomer and macromer, and additional monomer such

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as hydroxyl group containing monomer or monomer that is identical to that of presently claimed formula (I). There is also disclosed process for making the ink that comprises dissolving the water-insoluble polymer, adding pigment and water, kneading to form paste, and distilling off solvent (paragraphs 1, 6, 30-32, 47, 74, and 78-79).

Although there is no explicit disclosure that the water-insoluble polymer has ionic group at its end, given that the water-insoluble polymer is formed from salt-forming monomer that includes cationic monomers and anionic monomers such as (meth)acrylic acid, it is clear that the use of these monomers would inherently produce polymer with functional group, i.e. carboxylic acid, at its end.

In light of the above, it is clear that EP 1158030 anticipates the present claims.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1158030 in view of Hicks (U.S. 3,960,824).

EP 1158030 discloses water-based ink comprising aqueous medium and colorant comprising polymer particles that comprise pigment and water-insoluble polymer which is obtained from salt-forming group containing monomer, macromer, monomer copolymerizable with the salt-forming group containing monomer and macromer, and additional monomer such as hydroxyl group containing monomer or monomer that is identical to that of presently claimed formula (I). There is also disclosed process for making the ink that comprises dissolving the water-insoluble polymer having ionic group at its end, adding pigment and water, kneading to form paste, and distilling off solvent (paragraphs 1, 6, 30-32, 47, 74, and 78-79).

The difference between EP 1158030 and the present claimed invention is the requirement in the claims that the water-insoluble polymer possesses ionic group at its end derived from chain transfer agent having ionic group.

EP 1158030 discloses that during polymerization of the water-insoluble polymer, chain transfer agent such as alkyl mercaptan or mercaptoethanol is utilized.

Hicks discloses that the structure of mercaptans can have a considerable influence upon the properties of polymer product and that, for instance, carboxylic acid functionality can be incorporated into polymer using mercaptopropionic acid. Hicks also discloses the equivalence and interchangeability of alkyl mercaptan or mercaptoethanol, as disclosed by EP 1158030, with mercaptopropionic acid as presently claimed (col.1, lines 7-10, col.3, line 66-col.4, line 2, and col.6, lines 5-11). It would have been within the skill level of one of ordinary skill in the art to recognize that the presence of functional groups on a polymer would effect polymer properties such as dispersability, solubility, etc.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to utilize chain transfer agent such as mercaptopropionic acid when producing the water-insoluble polymer in EP 1158030 in order to produce polymer with carboxylic group at its end in order to control the properties of the polymer such as dispersability, water-solubility, etc. and thereby arrive at the claimed invention.

Allowable Subject Matter

12. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 6 would be allowable if rewritten in independent form as described above given that there is no disclosure in the “closest” prior art, namely, Bassett (U.S. 4,139,514) or Wang et al. (U.S. 2003/0092797) of water-based ink comprising a colorant and water-insoluble polymer having at least two hydroxyl groups at its end wherein the colorant is contained in the particles of the water-insoluble polymer.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Akers, Jr. et al. (U.S. 6,652,634) disclose graft copolymer comprising hydrophilic segment and hydrophobic segment that is produced using free radical polymerization that utilizes 3-mercapto-1,2-propanediol.

Rao et al. (U.S. 6,262,207) disclose ink comprising water-soluble polymer that has at least two hydroxyl groups at its end which is in direct contrast to present claims which require water-insoluble polymer.


Hutter et al. 9U.S. 5,216,071) disclose ink comprising hydroxyacrylic resin, however, there is no disclosure that the resin has two or more hydroxyl groups or ionic group at its end as presently claimed.

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
4/1/05